RPC R&D

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Recent RPC efforts

- **In the February meeting Rich Talaga gave list of possible modifications to the basic RPC parts**
  - The object was to look for a reduced cost design
  - Possible modifications
    - avalanche mode operation,
    - aluminum coated foam for strips,
    - Capacitive coupling to the readout strips
    - simplified non-recirculating gas system.
- **And Rich Schmitt discussed ways to simplify the gas system**
    - Remove filters
    - Do not recirculate, pulsed flow

- **Using some of these ideas, I tried a modification to the proposal RPC design using shipping container**
  - container stacks twice the height of the Liquid cell length,
  - light containers to avoid high permit cost in shipping
  - At best, it looks like the cost could be reduced to “about the same” amount as the Liquid Scintillator design

- **Using some of the same cost saving ideas, Carl Bromberg tried a RPC design modification using RPCs in a monolithic structure**
  - long readout strips equal to the Liquid cell length,
  - double gap RPCs.
  - At best, it looks like the cost could be reduced to “about the same” amount as the Liquid Scintillator design

And …

- **We do recognize that only a few of us in NOvA like the RPC solution**

So …

- **Our consensus is that the RPC solution is way, way back on the back, back burner.**
  - If the APDs falter (need very low noise), or if the Liquid Scintillator cost rises for some reason, then
  - **RPCs remain a fully viable solution which could be resurrected**
    - I believe it would be OK to report this to the PAC if deemed useful
  - For now, we are shelving our efforts
    - E.g. Ray Yarema's effort on an RPC ASIC will now be for LC alone
  - But we are keeping our eyes and ears open for new advances that might make a difference
    - **Please listen to Tianchi Zhao's talk coming up in a few minutes**